SIEMENS

HVAC Products

# Facts

## Extension of semi flush-mounted room thermostat range

For 2-pipe and 4-pipe fan coil / compressor and single-duct VAV applications.

**April 2009**
No. 32X049EN

**32, Room thermostats**
Sales release new RDF/RDU

**Product No. (ASN):**
**RDF300**
**RDF300.02**
**RDF300.02/SL**
**RDF340**
**RDU340**

**Target audience:**

Product Managers
Sales Managers
Sales Staff
Support Staff

**RDF300...**

**RDF300.02/SL**

**RDF340**

**RDU340**

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# Extension of semi flush-mounted room temperature controller range

## Introduction

2 years ago, Siemens introduced the first semi flush-mount room temperature controllers RDF310 and RDF410. Customer feedback is very positive and sales volumes are exceeding expectations resulting in the development of a range extension, which is now available as room temperature controllers RDF300…, RDF340 and RDU340.

The new semi flush-mount room temperature controllers RDF (phase 2) come with the same stylish and slim look & feel of the already introduced semi flush-mount RDF (phase 1), but with additional features and benefits. These include additional applications and multifunctional inputs. This makes these new products especially suitable for hotel guest rooms, offices and apartments.

**New applications:**

- Fan coil units
  - 2-pipe or 4-pipe on/off fan coil units / compressors in DX type equipment
  - 2-pipe on/off and electric heater fan coil units / compressors in DX type equipment
  - 2-pipe with 3-position valve fan coil units
- VAV / CAV systems
  - Single-duct
  - Single-duct and electric heater

**New main features:**

- Single- or 3-speed automatic or manual fan with advanced fan control function
- 2 multifunctional inputs for external sensor, keycard or contact switch, etc.
- Modulating control outputs (DC 0…10 V signal)
- Automatic or manual heating / cooling changeover
- Temperature limitation for underfloor heating
- Minimum and maximum limitation of air flow signal (DC 0…10 V output)
- AC 230 V or AC 24 V operating voltage

The semi flush-mount room temperature controllers are designed to fit into an 86 x 86 x 47 mm conduit box with fixing centers 60.3 mm (reference BS 4662 / IEC 60670). Optional conduit boxes (ARG71) are also available as accessory items. Another accessory is the plastic mounting bracket (ARG70.3) for conduit boxes with insufficient depth. The ARG70.3 mounting bracket is mounted between the wall and the temperature controller to increase the headroom in the box by 10 mm.

Release of the next phase (phase 3) of the semi flush-mount room temperature controller range extension is scheduled for the 3$^{nd}$ quarter of 2009 and will include variants with time program and Konnex field bus communication.

# Product range

## RDF300… – room temperature controllers for fan coil units and DX type equipment

RDF300

RDF300.02

RDF300.02/SL

**Main features of RDF300:**

- Slim, stylish and semi flush-mount design
- Large display
- Applications:
  - 2-pipe on/off
  - 4-pipe on/off
  - 2-pipe on/off with electric heater
  - 2-stage heating
  - 2-pipe with 3 position control valve
- On/off and modulating PI/P-control
- 2 multifunctional inputs for energy saving and maintenance options
- Single- or 3-speed fan control (automatic / manual)
- Minimum and maximum setpoint limitation
- Temperature limitation for underfloor heating
- AC 230 V operating voltage

**Additional features of RDF300.02..**

- Backlit LCD
- Silver color (RDF300.02/SL)

## RDF340 – room temperature controller for fan coil units with DC 0…10 V control valves

**Main features:**

- All features of RDF300
- Applications:
  - 2-pipe with DC 0…10 V control valve
  - 4-pipe with DC 0…10 V control valve
  - 2-pipe with DC 0…10 V control valve and electric heater (with additional converter)
- AC 24 V operating voltage

## RDU340 – room temperature controller for VAV / CAV systems

**Main features:**

- Slim, stylish and semi flush-mount design
- Large display
- Applications:
  - Single-duct
  - Single-duct with electric heater (on/off)
- Modulating PI/P-control with DC 0…10 V output signal
- 2 multifunctional inputs for energy saving and maintenance options
- Minimum and maximum setpoint limitation
- Adjustable minimum and maximum limitation of output signal DC 0…10 V
- AC 24V operating voltage

# Product replacement

The RDF300…, RDF340 and RDU340 room temperature controllers do not replace existing products.

# Sales release

The RDF300, RDF300.02, RDF300.02/SL, RDF340 and RDU340 are open for ordering and available from DC Nuremberg.

# Documentation

The data sheets and basic documentation are available :

| Products | Documentation | Document no. |
|---|---|---|
| RDF300… / RDF340… | Data sheet | N3076 |
| | Basic documentation | CE1P3076 |
| | Mounting / Installation instructions | M3076 |
| | Operating instructions | CE1B3076 |
| | CE declaration | CE1T3076 |
| | Environmental product declaration | CE1E3076 |
| RDU340 | Data sheet | N3078 |
| | Basic documentation | CE1P3078 |
| | Mounting / Installation instructions | M3078 |
| | Operating instructions | CE1B3076 |
| | CE declaration | CE1T3076 |
| | Environmental product declaration | CE1E3076 |

The new RDF are easy-to-understand devices that do not require special training. People familiar with the existing RDF will easily understand the functionality of the new semi flush-mounted room temperature controllers.

For questions please get in touch with:
George Voulvoutzis, Product Manager in Greece, phone +30 210 6864177, e-mail: george.voulvoutzis@siemens.com

For questions relating to technical topics about the Acvatix™ range of valves and actuators, please get in touch with :
Georgios Leonardos, phone +30 210 6864961, e-mail: georgios.leonardos@siemens.com
Konstantinos Lontidis, phone +30 2310 479482, e-mail: konstantinos.lontidis@siemens.com

Kind regards

Siemens A.E.
Industry Sector
Building Technologies Division
HVAC Products

George Voulvoutzis
Product Manager

George Kottaras
Division Regional Head HVP

# Functions, features and benefits

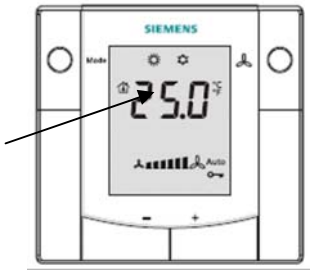
***Slim and stylish thanks to semi flush-mounted design***

| Features / functions | Benefits |
|---|---|
| | The new semi flush-mounted room temperature controllers offer a very slim, modern and stylish look.<br>The ergonomic user interface with a large display and push buttons make this controller especially user-friendly.<br>A variant in silver is available as an option. |

***Backlit LCD (optional)***

| Features / functions | Benefits |
|---|---|
| | The backlit LCD with soft blue color improves readability in dark environments and at night. |

***Display of setpoint or current room temperature***

| Features / functions | Benefits |
|---|---|
| Current room temperature<br>  | As an alternative to displaying the current room temperature, the RDF / RDU can be configured to display the setpoint only. This simplifies user operation and particularly interesting for hotel rooms. |

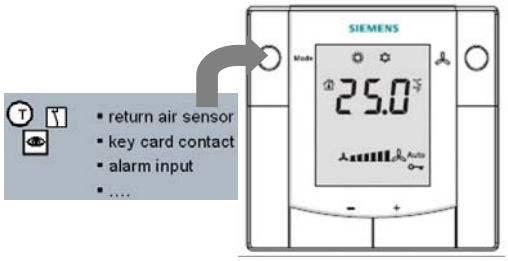
***Concurrent display of degree C and F***

| Features / functions | Benefits |
|---|---|
| <br>Showing the setpoint 24.5 °C and 76 °F simultaneously | The room temperature controller can display the temperature both in degree Celsius and Fahrenheit. This is especially helpful in hotels with guests from overseas. |

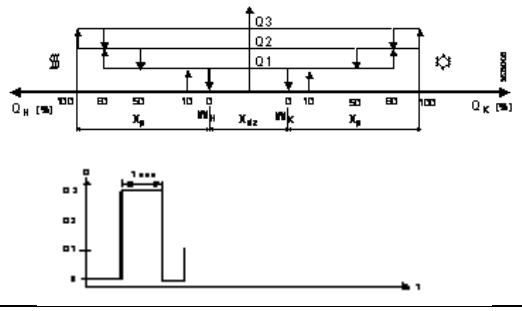
### *Numerous applications in one model*

| Features / functions | Benefits |
|---|---|
| **RDF300.../RDF400...**<br> <br>DIP switch number / Application / 2-pipe / 2-pipe, 3 position / 2-pipe & electrical heater / 4-pipe [1]<br>1: OFF / ON / OFF / **ON**<br>2: OFF / OFF / ON / **ON**<br>**RDF340**<br>DIP switch number / Application / 2-pipe / 2-pipe & electrical heater / 4-pipe [1]<br>1: OFF / OFF / **ON**<br>2: OFF / ON / **ON**<br>1) Factory setting | One model (ASN) offers numerous applications easily selected via DIP switch. This reduces the number of ASNs and simplifies ordering and stocking. |

### *Multifunctional inputs*

| Features / functions | Benefits |
|---|---|
|  | 2 multifunctional inputs with freely assignable functions:<br>o External / return air sensor for temperature acquisition at an alternative location<br>o Heating / cooling changeover sensor: Automatic changeover for more convenience<br>o Operating mode switchover contact: A useful function for hotel rooms with keycard, commercial buildings with time clock, etc. that helps save energy when the specific area is not in use.<br>o Dewpoint sensor input: In connection with a dewpoint sensor to prevent condensation and to avoid damage to the building on chilled ceiling applications.<br>o Electric heater enable contact: Enabling / disabling of electric heater from remote for tariff regulation, energy saving purposes, etc.<br>o Fault input contact: Digital input to signal faults and maintenance reminder (e.g. filter cleaning) to help extend the life of equipment. |

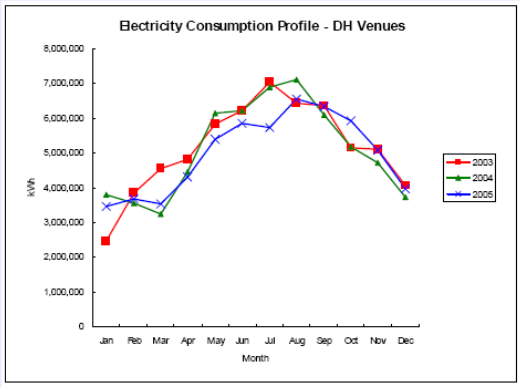
### *Single- or 3-speed fan control (automatically or manually)*

| Features / functions | Benefits |
|---|---|
|  | Automatic fan mode allows the room temperature controller to automatically vary the fan speed depending on setpoint and current room temperature, thereby improving comfort and saving energy.<br>Manual fan mode allows a constant fan speed setting (low, medium, high) selected by users based on their needs. |

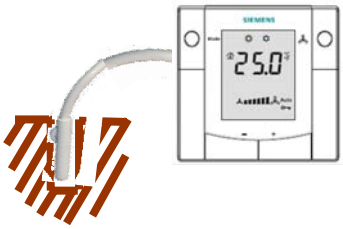
### *Clean fan filter reminder*

| Features / functions | Benefits |
|---|---|
| | When the fan operating hours reach the preset time, a “FIL” message appears on the display.<br>This reminder helps you carry out regular maintenance on the fan coil unit. |

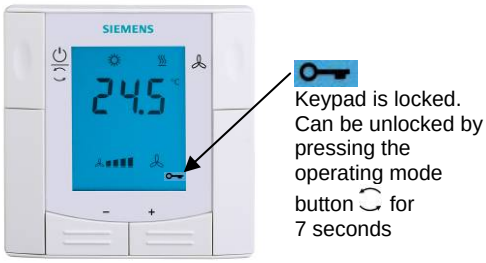
### *Setpoint limitation*

| Features / functions | Benefits |
|---|---|
| DEPARTMENT OF HEALTH<br>ENVIRONMENTAL REPORT 2005-06<br><br>Description of energy saving measures: Adjustment of indoor A/C temperature to 25.5°C in the summer time for DH buildings equipped with central A/C facilities (except there are special operational reasons to maintain a lower indoor temperature such as drug stores, mortuaries etc.)<br>Expected completion date: Sep-05<br>Status as at end 2005: Implemented<br><br>  <br><br>*(* information provided by EMSD)*<br><br>The diagram indicates a decreasing trend in electricity consumption in 2005 during summer months from April to September as compared to previous years. Upon | Maximum and minimum setpoint limitation: The adjustable range of the setpoint can be limited. This is especially helpful in public areas where energy consumption is to be controlled, resulting in lower electrical costs.<br><br>For example, the property manager can set the minimum setpoint for cooling to 25 °C and the maximum setpoint for heating to 18 °C in public areas of a shopping mall or school. This allows for better management of energy consumption, thus reducing electrical costs. |

***Temperature limitation for underfloor heating.***

| Features / functions | Benefits |
|---|---|
|  | Function for underfloor heating.<br>A floor temperature sensor, connected to the multifunctional input, monitors the floor temperature.<br>This function improves comfort and protects the floor on applications with floor heating |

***Keypad lock***

| Features / functions | Benefits |
|---|---|
|  | Automatic / manual lock of the keypad helps prevent unauthorized readjustment on the room temperature controller. |

***Adjustable control parameters***

| Features / functions | Benefits |
|---|---|
| | Many control parameters can be adjusted to meet individual needs. This gives high flexibility and enables the controller to adapt to any type of application. |

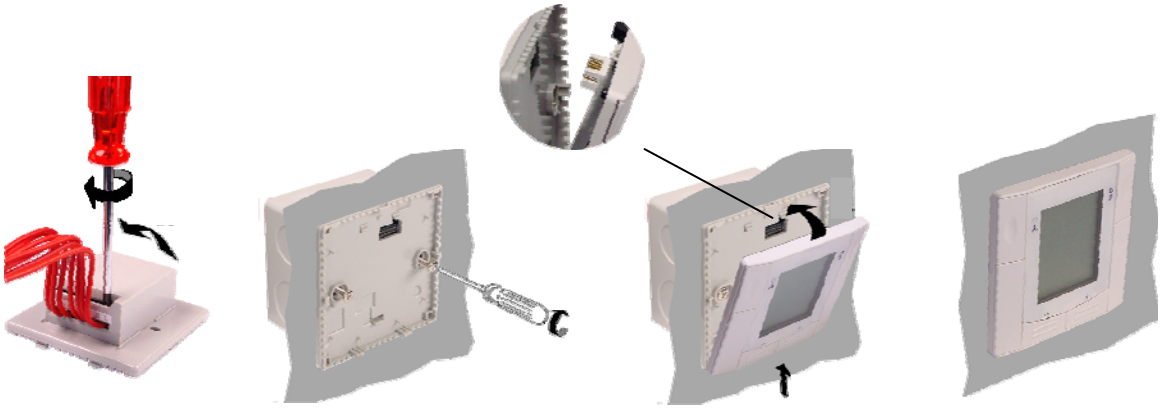
***Minimum output ON time / OFF time (compressor short cycle protection)***

| Features / functions | Benefits |
|---|---|
| | The room temperature controller can protect the compressor by limiting the on/off switching cycle, thereby reducing wear and tear and increase the lifetime of the compressor. Simply speaking, we can set a minimum on/off time via the control parameters to control the opening and closing actions if the user adjusts the setpoint or heating / cooling mode changeover incorrectly. |

***Easy to install***

**Features / functions**

The temperature controller is fast-acting and easy to install: (1) wire, (2) mount and (3) snap – no bothersome ribbon cable or dangerous opening with mains voltage.



(1) (2) (3)

Important: Please verify to ensure the controller fits respective conduit box. The controller requires at least 53 mm (W) x 68 mm (H) x 46 mm (D) for mounting in the rectangular conduit box with fixing center 60.3 mm.

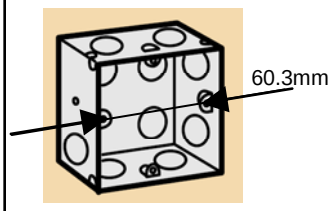
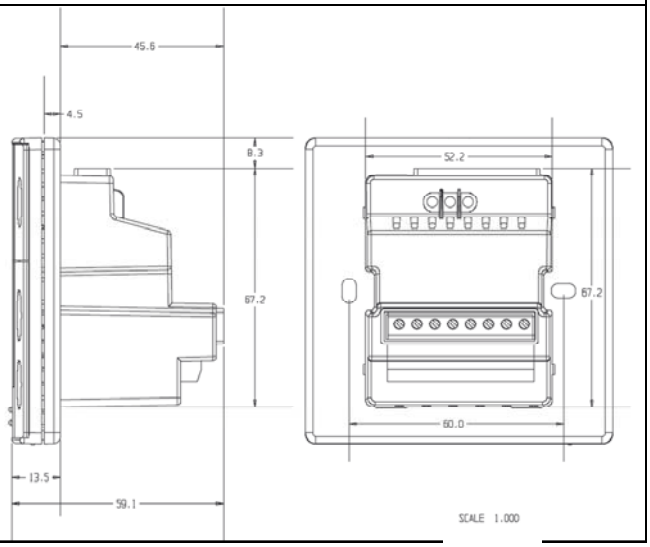
# Product overview RDF / RDU

| Procuct no. (ASN) | | | Applications | | | | | | Aux. functionality | | | | | | | | | Outputs | | | | | Inputs[1] | | | | | | Com | | Power |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fan coil (F) or VAV (V) | Control algorithm | Heating only | Cooling only | Heating or cooling (e.g. 2-pipe) | Heating and cooling (e.g. 4-pipe) | Heating and cooling changeover (e.g. 4-pipe main & secondary) | Cooling or heating & electric heating (e.g. 2 pipe & electric heating) | Manual heating / cooling changeover | Automatic heating / cooling changeover | Manual fan speed | Automatic fan speed | Vmin | Vmax | 7-day time program | Infrared remote control | Backlit LCD | On/off (relay) | 3-position (relay) | DC 0...10 V | 3-speed fan (relay) | 1-speed fan (relay) | Operating mode changeover contact (e.g. window contact or card key reader) | Heating / cooling changeover sensor | Remote temperature sensor | Alarm input | Dewpoint sensor | Electric heater enable | Konnex TP1 | Auxiliary control button | |
| **New stand-alone room temperature controllers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RDF300 | F | 2P/PI | • | • | • | • | • | • | • | • | • | • | | | | | | • | • | | • | • | • | • | • | • | • | • | | | AC230V |
| RDF300.02[2] | F | 2P/PI | • | • | • | • | • | • | • | • | • | • | | | | | • | • | • | | • | • | • | • | • | • | • | • | | | AC230V |
| RDF340 | F | PI | • | • | • | • | • | • | • | • | • | • | | | | | | | | • | • | • | • | • | • | • | • | • | | | AC24V |
| RDF400.01[2] | F | 2P/2P | • | • | • | • | • | • | • | • | • | • | | | • | • | • | • | • | | | | • | • | • | • | • | • | | | AC230V |
| RDU340 | V | PI | • | • | • | • | | | • | • | | | • | • | | | | • | | • | | | • | • | • | • | • | • | | | AC24V |
| **New communicating room temperature controllers (coming in the 3nd quater of 2009)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RDF301 | F | 2P/PI | • | • | • | • | • | • | • | • | • | • | | | | | | • | • | | • | • | • | • | • | • | • | • | • | | AC230V |
| RDF301.50 | F | 2P/PI | • | • | • | • | • | • | • | • | • | • | | | | | | • | • | | • | • | • | • | • | • | • | • | • | • | AC230V |
| RDU341 | V | PI | • | • | • | • | | | • | • | | | • | • | | | | • | | • | | | • | • | • | • | • | • | • | | AC24V |
| **Existing semi flush-mounted room temperature controllers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RDF310.2 | F | 2P | • | • | • | | | | • | | • | • | | | | | | • | | | • | | | | | | | | | | AC230V |
| RDF310.21 | F | 2P | • | • | • | | | | • | | • | • | | | | • | • | • | | | • | | | | | | | | | | AC230V |
| RDF410.21 | F | 2P | • | • | • | | | | • | | • | • | | | • | • | • | • | | | • | | | | | | | | | | AC230V |

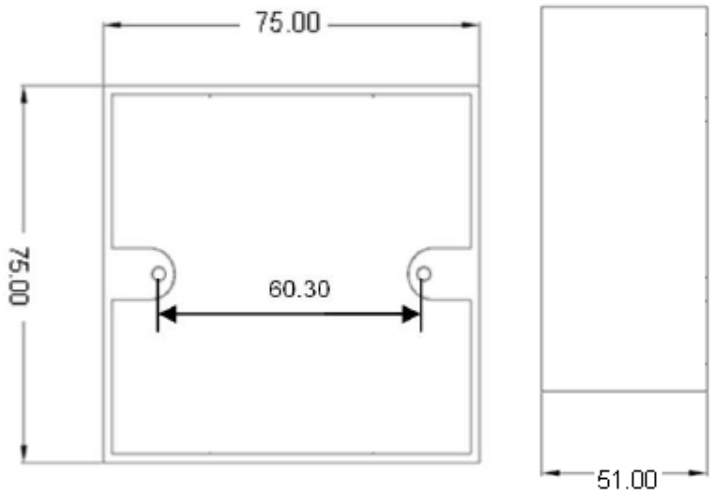
1) 2 x multifunctional inputs X1/X2 (sensor or digital input)

2) Also available in silver color (RDFxxx.xx/SL) and in the 3nd quater of 2009

# Technical data

| | |
|---|---|
| **RDF300 / RDF400:** | |
| Operating voltage | AC 230 V +10/-15%, 50/60 Hz |
| Output rating | |
| Heating/cooling (relay) | Max. 5 (2) A |
| 3-speed fan (relay) | Max. 5 (2) A |
| **RDF340:** | |
| Operating voltage | AC 24 V +/-20 %, 50/60 Hz |
| Output rating | |
| Heating/cooling (DC 0..10 V) | Max. 1 mA |
| 3-speed fan (relay) | Max. 5 (2) A @ AC 230 V |
| **RDU340:** | |
| Operating voltage | AC 24 V +/-20 %, 50/60 Hz |
| Output rating | |
| Heating/cooling (DC 0..10 V) | DC 0...10 V, max. 1 mA |
| Electric reheater (relay) | Max. 5 (2) A @ AC 230 V |
| Input | |
| Multifunctional X1, X2 | NTC cable sensor like QAH11 / switch |
| Setpoint setting range | 5...40 °C in 0.5 °C increments |
| Control algorithm | 2P / PI (P) |
| Environmental conditions | |
| Temperature | 0...50 °C |
| Relative humidity | <95% |
| Mounting type | Semi flush-mount, fixing centers 60.3 mm |
| Dimension (visible part) | 86mm x 86mm x 14 mm |
| Mounting type | Semi flush-mount for mounting into recessed rectangular conduit box with fixing centers 60.3 mm   |
| Dimensions |   |

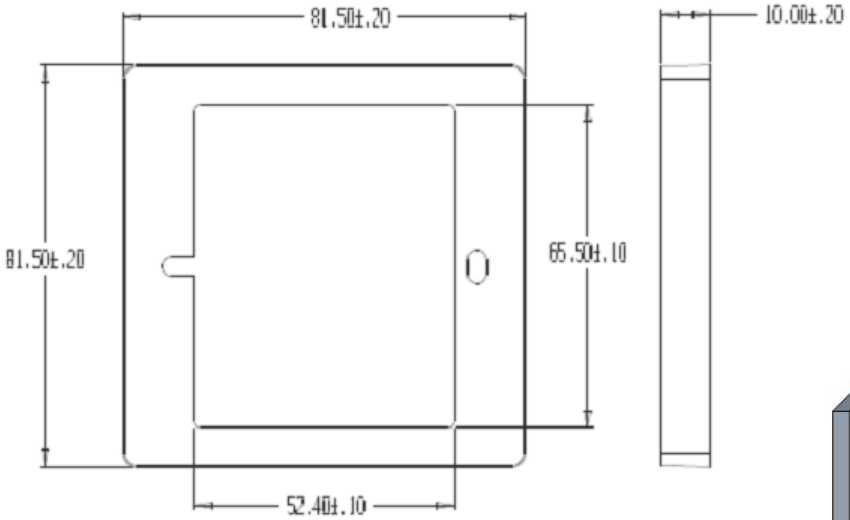
## ARG71 – conduit box for all RDF semi flush-mounted room temperature controllers




**Main features:**

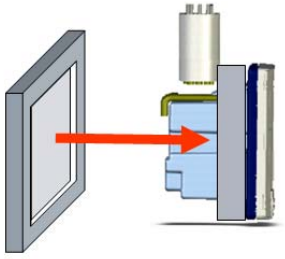
- Size: 75 mm x 75 mm x 51 mm with fixing centers 60.3 mm
- For installation of all semi flush-mount room temperature controllers
- Conformant to BSI standard BS4662, EN 50086-2-1, IEC/670.

## ARG70.3 – plastic mounting bracket to fit RDF semi flush-mount room temperature controllers to conduit boxes without sufficient depth




**Main features:**

- For installation of all semi flush-mount room temperature controllers
- ARG70.3 is put between the wall and the room temperature controller, increasing the headroom in the box by 10 mm



# Peripheral devices and accessories

The RDF room temperature controllers are suited for use with our standard Siemens peripheral devices, such as zone and controls valves and accessories.

| | Description | Product no. | Data sheet |
|---|---|---|---|
| | Infrared remote control | **IRA210** | 3059 |
| | Cable temperature sensor | **QAH11.1** | 1840 |
| | Room temperature sensor | **QAA32** | 1747 |
| | Condensation detector / supply unit | **QXA2000 / AQX2000** | 1542 |
| *On/off actuators* | Electromotoric on/off actuators | **SFA21...** | 4863 |
| | Thermal actuators (for radiator valves) | **STA21...** | 4893 |
| | Thermal actuators (for small valves 2.5 mm) | **STP21...** | 4878 |
| | | | |
| *3-position actuators* | Electrical actuators, 3-position (for radiator valves) | **SSA31...** | 4893 |
| | Electrical actuators, 3-position (for small valves 2.5 mm) | **SSP31…** | 4864 |
| | Electrical actuators, 3-position (for small valves 5.5 mm) | **SSB31...** | 4891 |
| | Electromotoric actuators, 3-position (for valves 5.5 mm) | **SQS35…** | 4573 |
| *DC 0...10 V actuators* | Electrical actuators, DC 0...10 V (for radiator valves) | **SSA61...** | 4893 |
| | Electrical actuators, DC 0...10 V (for small valves 2.5 mm) | **SSP61…** | 4864 |
| | Electrical actuators, DC 0...10 V (for small valves 5.5 mm) | **SSB61...** | 4891 |
| | Electromotoric actuators, DC 0..10 V (for valves 5.5 mm) | **SQS65…** | 4573 |
| | Thermal actuator, DC 0...10 V (for small valves and radiator valves) | **STS61** | 4880 |

***Note:*** All peripheral devices and accessories must be ordered separately. When ordering, please indicate product number and name.

## Products coming soon…

## RDF400… – programmable room temperature controllers

RDF400.01

RDF400.01/SL

Coming in the 3nd quarter of 2009

**Main features:**

All main features of RDF300 plus
- Backlit LCD
- Infrared remote control receiver
- 8 timers with a 7-day programmable schedule

**Additional features**
- Silver color (RDF400.01/SL)

## RDF301… and RDU341… – KNX-compatible room temperature controllers

RDF301.50

Coming in the 3nd quarter of 2009

**Main features of RDF301:**

All main features of RDF300 plus:
- Backlit LCD
- KNX (S-mode, LTE mode) communication

**Main features of RDF301.50:**

All main features of RDF301 plus:
- Switches for lighting, blinds and scene control via KNX

**Main features of RDU341:**

All main features of RDU340 plus:
- Backlit LCD
- KNX (S-mode, LTE mode) communication